What is claimed is:

1. A power distributor for distributing electric power from a power source equipped in a vehicle to a plurality of electronic units, the power distributor comprising:

an input terminal connected to the power source,

a plurality of output terminals connected to each of electronic units; and

a plurality of semiconductor switching elements disposed between the input terminal and each of output terminals,

wherein the input terminal and the plurality of output terminals are is formed of metallic plates, respectively; and

the input terminal and the plurality of output terminals are arranged on the same plane perpendicular to a direction of the thickness of the metallic plates.

2. The power distributor according to claim 1, wherein the input terminal and the plurality output terminals are integrated with each other by resin mold; and

end portions of each of the input terminal and the plurality of output terminals are protruded outside of the resin mold.

3. The power distributor according to claim 1 further comprising:

a cover attached to the resin mold to cover each of the semiconductor switching elements,

wherein the cover and the resin mold form a case for accommodating the plurality of semiconductor switching elements.

4. The power distributor according to claim 1, wherein the input terminal comprises a plurality of input terminals connected to the power source through different paths from each other.

5. The power distributor according to claim 4, wherein each of the plurality of input terminals is disposed to protrude in the same direction.

6. The power distributor according to claim 1, wherein all of the plurality of output terminals are disposed to protrude in the same direction.

7. The power distributor according to claim 5, wherein each of the plurality of output terminals is disposed to protrude in the same direction.

8. The power distributor according to claim 6, wherein an element connecting portion, extended in parallel to the arrangement direction of each of the output terminals and electrically connected to the input terminal, is arranged at

a position adjacent to a far end of each of the output terminals;

the plurality of semiconductor switching elements corresponding to the plurality of output terminals are arranged to correspond to the arrangement of each of the output terminals; and

each of the semiconductor switching elements has a first terminal electrically connected to each of the output terminals, and a second terminal connected to the element connection portion.

9. The power distributor according to claim 8, wherein each of semiconductor switching elements is directly mounted on the element connection portion.

10. The power distributor according to claim 8, wherein the element connection portion and the input terminal electrically connected to the element connection portion are integrally formed of a single metallic plate.

11. The power distributor according to claim 8, wherein each of output terminals is arranged in a smaller pitch than that of each of semiconductor switching elements;

each of the output terminals has a relay portion having a shape respectively spreading as it goes from its protruded end toward the second terminal of each of the semiconductor

switching elements; and

the second terminal of each of semiconductor switching elements is directly connected to the relay portion.

12. The power distributor according to claim 11, wherein the plurality of output terminals includes a large current output terminal and a plurality of small current output terminals whose width is smaller than that of each of the large current output terminals, the small current output terminals arranged on both outsides of the large current output terminal; and

a path of the relay portion of the large current output terminal is shorter than a path of the relay portion of each of the small current output terminals.

13. The power distributor according to claim 1, further comprises a fuse being fused at the time of occurrence of the over current, at the middle portion of each of the output terminals.

14. The power distributor according to claim 1 further comprising a control circuit board and a plurality of board terminals electrically connected to the control circuit board,

wherein the board terminals are formed of metallic plates, and arranged on the same plane as the input terminal and the

output terminals.

15. The power distributor according to claim 14, wherein the board terminals are integrated with the input terminal and the output terminals by the resin mold, and the end portion of each of the input terminal, the output terminals, and the board terminals protrudes on the outside of the resin mold.

16. The power distributor according to claim 15 further comprising a cover attached to the resin mold to cover each of the semiconductor switching elements and the control circuit board;

wherein the cover and the resin mold form a case for accommodating the plurality of semiconductor switching elements and the control circuit board.

17. The power distributor according to claim 14, wherein the control circuit board is arranged in almost parallel to a plane at a position separated from a plane on which the input terminal, output terminals and the board terminals are arranged; and

end portions of the board terminals are bent upwardly toward the control circuit board and connected to the control circuit board.

18. The power distributor according to claim 17, wherein each of the board terminals include a control terminal for connecting a current flow control terminal of each of semiconductor switching elements to the control circuit board;

the control terminals is alternately arranged with the output terminals; and

one end portion of the control terminal is directly connected to the current flow control terminal of the semiconductor switching element, and the other end portion is bent upwardly toward the control circuit board.

19. The power distributor according to claim 17, wherein each of the board terminals include a signal terminal for inputing and outputting a signal from an outside to the control circuit board;

the signal terminals are arranged so that one end portion of each of the signal terminals protrudes in the same direction;

the other end portion of each of the signal terminals is bent upwardly toward the control circuit board; and

the output terminals are arranged to sandwich the semiconductor switching element with each of the signal terminals and protrude in the reverse direction to the signal terminals.

20. The power distributor according to claim 19, wherein each of the board terminals include a control terminal for connecting a current flow control terminal of the semiconductor switching element to the control circuit board;

the control terminal is alternately arranged with the output terminal; and

one end portion of each of the control terminals is directly connected to the current flow control terminal of each of the semiconductor switching elements, and the other end portion is bent upwardly toward the control circuit board; and

the control circuit board is arranged at a position where the semiconductor switching element is stepped over between the control terminal and the signal terminal.

21. A method for producing the power distributor of claim 2, the method comprising:

punching a single metallic plate into a predetermined shape to produce an original plate in which the input terminal and the output terminal are integrally connected to each other;

performing a molding outside the original plate to form a cutting window to expose a connection portion of both of the input and output terminals in the original plate to an outside, and a element window to expose to the outside an area on which the semiconductor switching element is mounted;

cutting the connection portion through the cutting

window; and

arranging the semiconductor switching element in the element window.

22. A method for producing the power distributor of claim 13, the method comprising:

punching a single metallic plate into a predetermined shape to produce an original plate in which the input terminal and the output terminal are integrally connected to each other;

performing a molding outside the original plate to form a cutting window to expose a connection portion of both of the input and output terminals in the original plate to an outside, and a element window to expose to the outside an area on which the semiconductor switching element is mounted, a fuse window to expose an area on which the fuse is provided;

cutting the connection portion through the cutting window;

arranging the semiconductor switching element in the element window;

cutting the middle portion of the output terminals through the fuse window; and

inserting the fuse between both terminals formed in the cutting step.

23. A method for producing the power distributor of

claim 14, the method comprising:

punching a single metallic plate into a predetermined shape to produce an original plate in which the input terminal, the output terminal and the board terminal are integrally connected to each other;

performing a molding outside the original plate to form a cutting window to expose a connection portion of both terminals in the original plate to the outside; an element window to expose to the outside an area on which the semiconductor switching element is mounted;

cutting the connection portion through the cutting window; and

arranging the semiconductor switching element in the element window.

24. The method according to claim 23 further comprising:

performing a molding to form a terminal window to expose one end portion of the board terminal;

bending upwardly the end portion of the board terminal toward the control circuit board from the terminal window;

arranging the control circuit outside the resin mold; and

connecting the control circuit to the end portion of the board terminal upwardly bent.

25. A power distributor for distributing electric power from a power source equipped in a vehicle to a plurality of electronic units, the power distributor comprising:

an input terminal connected to the power source;

a plurality of output terminals connected to each of the electronic units;

a plurality of semiconductor switching elements each having a first current flowing terminal provided corresponding to the output terminals and electrically connected to the input terminal, and a second current flowing terminal electrically connected to the output terminals;

a case for accommodating the semiconductor switching elements; and

a heat radiation member provided to be exposed outside the case,

wherein each of the semiconductor switching elements is electrically connected to the input terminal on a conductor board electrically connected to the first current flowing terminal; and

the conductor board is thermally connected to the heat radiation member.

26. The power distributor according to claim 25, wherein an metallic sheet forms the conductor board and the input terminal.

27. The power distributor according to claim 25, wherein the input terminal and the output terminals are arranged on almost the same plane, and the heat radiation member is arranged in almost parallel to the plane.

28. The power distributor according to claim 27, wherein the input terminal and the output terminals are integrated by a resin mold;

the main body of the case is structured by the resin mold;

a window from which the conductor board is exposed to the outside is formed in the main body of the case;

the heat radiation member having a shape to cover almost the whole surface of the case is provided on the one side of the case; and

the heat radiation member is thermally connected to the conductor board through the window.

29. The power distributor according to claim 28, wherein a position where the heat radiation member is thermally connected to the conductor board, is a base portion which locally protrudes inside the case from the inside surface of the heat radiation member;

the base portion is inserted into the window of the case main body; and

an amount of the protrusion of the base portion is set so that the second current flowing terminal of each of semiconductor switching elements on the conductor board thermally connected to the base portion is just positioned at a height at which the second current flowing terminal is connected to each of the output terminals.

30. The power distributor according to claim 29, wherein the output terminals are laterally aligned in a row;

each of semiconductor switching elements is mounted being aligned in a row on the conductor board in the arrangement corresponding to the arrangement of the output terminals;

the base portion and the window are formed in a shape to extend in the parallel direction to the arrangement direction of thee semiconductor switching elements

31. The power distributor according to claim 30, wherein a plurality of fins are formed on the rear surface of the heat radiation member;

the longitudinal direction of these fins coincides with the longitudinal direction of the base portion; and

the whole body of the heat radiation member is integrally formed.

32. The power distributor according to claim 27, further comprising a control circuit board for controlling the current flowing among the current flowing terminals of each of the semiconductor switching elements, the control board arranged in almost parallel to a plane on which the input terminal and the output terminals are arranged and in the separated condition from each of the semiconductor switching elements, on the opposite side to the heat radiation member.

33. A power distributor for distributing electric power from a power source mounted on a vehicle to a plurality of electronic units, the power distributor comprising:

an input terminal connected to the power source;

a plurality of output terminals connected to each of electronic units;

a plurality of semiconductor switching elements having a first current flowing terminal provided corresponding to the output terminals and connected to the input terminal, a second current flowing terminal connected to the output terminals, and a current flow control terminal into which a signal for controlling the current flowing between thee first and second current flowing terminals is inputted;

a control circuit for forcibly turning off the semiconductor switching element when the current flowing through any one of semiconductor switching elements exceeds

a predetermined cut-off current; and

a fuse arranged in series with each of the semiconductor switching elements,

wherein when the semiconductor switching elements are not normally turned off, the fuse is fused to protect its downstream side circuit from the over current.

34. The power distributor according to claim 33, wherein the fuse has a fusing characteristic on the larger current side than the cut-off current.

35. The power distributor according to claim 34, wherein the fuse has a fusing characteristic on the larger current side than the allowable current of the semiconductor switching element.

36. The power distributor according to claim 33, wherein the fuse is provided in the middle portion of each of output terminals.

37. The power distributor according to claim 36, wherein the output terminals are formed of metallic plate, and are divided into a terminal main body portion connected to the outer circuit and an element connection portion connected to the second current flowing terminal of the semiconductor

switching element; and

the fuse is directly connected to the terminal main body portion and the element connection potion in such a manner that the both portions are connected to each other.

38. The power distributor according to claim 37, wherein both ends of the fuse are respectively connected to the end portion of the terminal main body portion and the end portion of the element connection portion.

39. The power distributor according to Claim 36, further comprising a case for accommodating the semiconductor switching elements, the case having a separation portion protruding toward a case main body of the case side to separate each of fuses from each other.

40. The power distributor according to Claim 39, wherein the case comprises:

a case main body in which the semiconductor switching elements are assembled; and

a cover attached to the case main body to cover the semiconductor switching elements, the cover structured so that the separation portion is provided on the rear surface of the cover to protrude toward the case main body side,

wherein under the condition that the cover is attached

to the case main body, each of fuses is separated from each other by the separation portion.

41. The power distributor according to claim 36, wherein the output terminals and the input terminal are formed of metallic plate; and

the output terminals and the input terminal are arranged to be aligned on the same plane perpendicular to its thickness direction.

42. The power distributor according to claim 41, further comprising:

a control terminal connected to the current flow control terminal of each of semiconductor switching elements,

wherein the control terminal, the input terminal and the output terminals are formed of metallic plates, and are arranged to be aligned on the same plane perpendicular to its thickness direction.

43. The power distributor according to Claim 42 further comprising a control circuit board in which the control circuit is assembled and arranged in almost parallel to the plane on which the input terminal, the output terminals and the control terminal are arranged,

wherein the input terminal, the output terminal and the

control terminal are electrically connected to the control circuit board.

44. The power distributor according to Claim 43, wherein the control circuit calculates a value corresponding to the current value flowing through each of semiconductor switching elements according to the difference between the voltage of the input terminal and the voltage of each of output terminals; and

when the value exceeds a predetermined cut-off current, a control signal to forcibly turn off the semiconductor switching element is outputted to the current flow control terminal of the semiconductor switching element through the control terminal.

45. The power distributor according to claim 40, wherein each of the terminals arranged on the same plane is integrated with each other by the resin mold, and the case main body is structured by the resin mold.

46. The power distributor according to claim 45, wherein a window to expose a middle portion of each of output terminals is provided in the case main body, and each of the fuses is provided on the output terminal portion exposed from the window.